

Demonstration of an Innovative Capping Technology at the Anacostia River in Washington, D.C.

U.S. EPA SITE Program Evaluation of AquaBlok™

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Project Collaboration

- U.S. EPA ORD
 - National Risk Management Research Laboratory (NRMRL)
- U.S. EPA National Center for Environmental Research
- U.S. EPA Region III
 - Anacostia Watershed Toxics Alliance (AWTA)
- HSRC (S&SW)
- AquaBlok™
- Mayor's Anacostia Waterfront Initiative: U.S. EPA, National Park Service, DC Department of Health, U.S. Navy, citizen's groups, industrial firms

Project Overview

Sediments in the Anacostia River (Washington, DC) are contaminated with polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and heavy metals, to levels that have hindered commercial, industrial, and recreational uses. This AquaBlok™ SITE demonstration investigates the efficacy of the AquaBlok™ capping technology for risk-management of contaminated sites.

Project Goals

1. Demonstrate the physical stability of an AquaBlok™-based composite cap. Compare these stabilities with sand-capped and uncapped (control) sediments.
2. Demonstrate the ability of an AquaBlok™-based composite cap to control groundwater seepage relative to seepage through the sand-capped and uncapped sediments.
3. Demonstrate the influence of an AquaBlok™-based composite cap on the benthic flora and fauna.

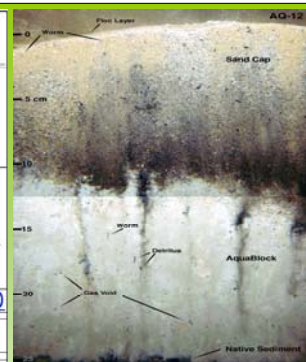
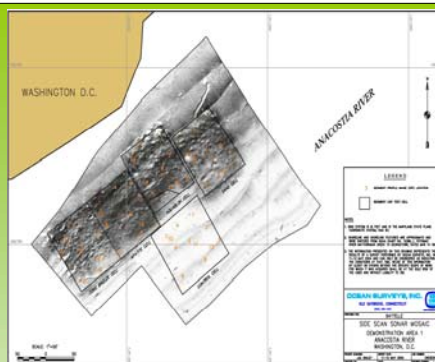
Target Measurements

Target of Measurement	Measurement Technique	Timing Relative to Placement
Evaluation of sediment/cap stability	Collection of sediment cores and corresponding on-site Sedilume Analysis	6 and 30 months after placement
	Collection of sediment cores and corresponding off-site and laboratory analysis for sediment moisture, PSD, TOC, and COCs including PCBs, PAHs, and metals	6 and 30 months after placement
	Sub-bottom-profiling sonar/bathymetric profiling to measure vertical stratification and cap thickness	1, 6, 18, and 30 months after placement
	Side scan sonar survey	30 months after placement
	Sediment profiling camera to visually examine the surface cap profiles in the surficial sand layers of the sand and composite caps	1, 6, and 30 months after placement
Gas migration potential	Gas flux measurements using gas flux chambers to monitor gas evolution through the sediment cap	~30 months after placement, for 1 month
Hydraulic conductivity	Descriptive ecological measurements	6 and 30 months after placement
Groundwater Seepage/sediment seepage rates	Cornell University/Matrix Seepage Meters	1, 6, and 30 months after placement
Benthic assays	Descriptive ecological measurements	30 months after placement
Benthic assays	Statistical tests of ecological parameters	30 months after placement
Visual Assessment	Sediment profiling camera	1, 6, and 30 months after placement

Project Preliminary Results (6 months post-capping)

1. Cap integrity maintained; little to no erosion or redistribution of cap material
2. Cap appears to support flora and fauna.
3. PCB/PAH/metals were observed in the AquaBlok™ material.
4. The occurrence/extent of PCB/PAH/metals release through diverted pore water from the edges of the cap is unknown.
5. AquaBlok™ is an effective hydraulic barrier: increased discharge rates along edge of test cells was observed.

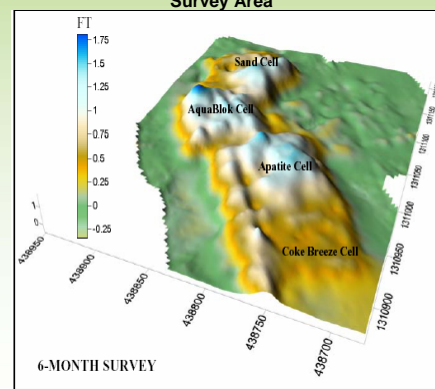
Project Location



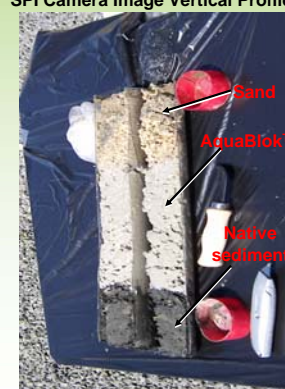
Anacostia River Project Location
(Washington Naval Shipyard in Background)



Anacostia River AquaBlok™ Cap Installation



Cap Thickness



AquaBlok™ Core:
(showing capping layers)



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